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SURGERY FOR OBESITY  
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## Online only case report

# Emergency Roux-en-Y gastric bypass to treat “stenosis + leak” combination after sleeve gastrectomy in a super–super obese individual

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Functional stenosis at the level of incisura angularis is unique to sleeve gastrectomy (SG) and is regarded as a risk for a proximal leak [1–8]. The best treatment option in the emergency clinical setting of an acute leak in the presence of distal obstruction is not known.

Here we document an acute leak in the presence of a distal twist where an emergency Roux-en-Y gastric by-pass (RYGB) proved out to be life-saving. The leakage point is only addressed by patching. Both the leak and the obstruction were concomitantly treated with this 1-stage procedure without the use of stents.

To our knowledge, the case presented herein represents the first detailed documentation of such management strategy.

## Case report

A nondiabetic, 37-year-old man with a body mass index of 67 had a SG using a 36F bougie. The staple line was reinforced with continuous full thickness suturing using 000 V Loc suture (Covidien, Mansfield, MA). Oral contrast study performed postoperative day (POD) 1 revealed abrupt cutoff of contrast at gastric angle, and he was unable to sip clear liquids and was maintained by intravenous nutrition. His discharge was delayed. On POD 6, a 9 mm scope was gently advanced through the twisted lumen with ease, and a nasoduodenal feeding tube was placed. Contrast study confirmed the ongoing obstruction with some dilation proximally (Fig. 1). Full enteral alimentation commenced

through the feeding tube, and he was kept “nil by mouth” and under close surveillance. He was perfectly stable until POD 9 when an acute leak in addition to ongoing obstruction became clinically evident. He abruptly developed abdominal pain with a fever up to 39.5°C. C-reactive protein increased 15-fold to 270 mg /L. Computed tomography (CT) scan unequivocally documented the leak proximal to the obstruction (Fig. 2).

The patient was immediately taken to emergency laparoscopy. The content of the leak was confined between the abdominal wall and liver and all debris was cleaned. Operative gastroscopy identified the leak point, which was at the proximal corner of the staple line. It was, however, impossible to expose the leak laparoscopically as the gas introduced by gastroscopy inflated bowels and the size of the liver making further intervention difficult.

The option of stenting, draining, and performing a laparoscopic jejunostomy was discredited in favor of a definitive solution. Because laparoscopy could not provide enough exposure, we converted to open surgery to perform a RYGB. Gastric pouch was prepared utilizing 2 Endo GIA (Covidien) staplers. Operative gastroscopy helped to review the twist to secure the tube transection proximal to it. At this stage the leak point was identified as right at the upper end of the staple line, which was very high up and close to the gastroesophageal junction. A standard RYGB was performed using a 25 mm circular stapler (Covidien) after the anvil was introduced orally. Special care was taken to perform the anastomosis to the most dependent lower part of the pouch, which is 7 to 8 cm away and distal from the leak point. Technically it was impossible to address the leak point within a proper anastomosis. The side of the jejunal Roux limb was used as a patch to cover the leak. With few

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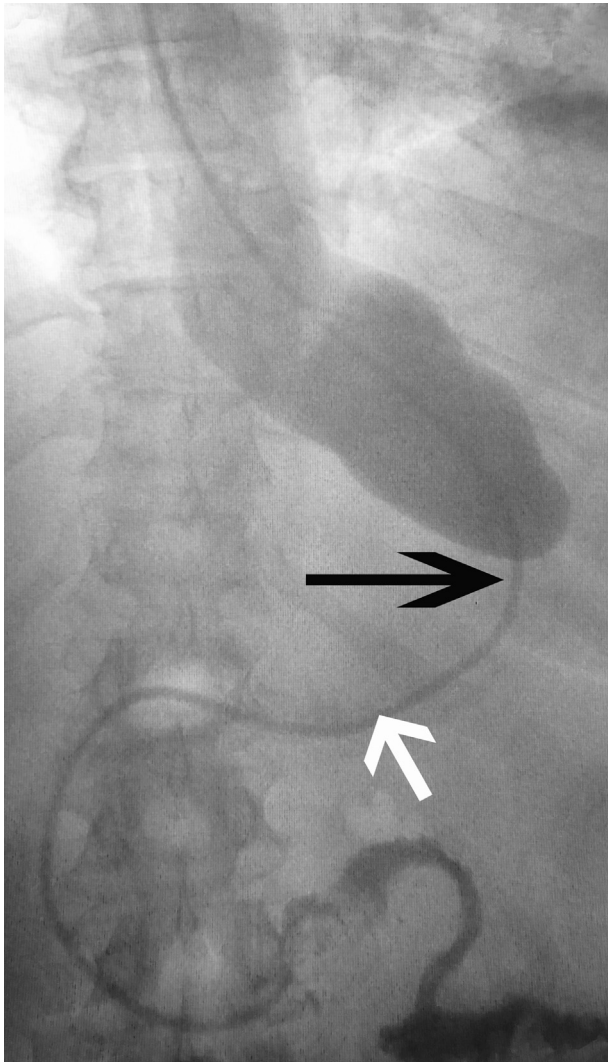


Fig. 1. Contrast study performed 6 days after the SG showing the stenosis (black arrow) and nasoduodenal feeding tube (white arrow).

absorbable stitches, the upper corner of the staple line was simply patched.

A nasogastric tube was introduced into the anastomosis. A tube jejunostomy was created, 2 closed suction drains were inserted, and the abdomen was closed.

Enteral nutrition through jejunostomy started the day after, and continuous low pressure suction from the nasogastric tube is continued for 2 days. Broad spectrum antibiotics were continued for 10 days. Recovery was uneventful. On POD 13 after the second operation, CT and oral contrast study found no leak and easy passage of contrast to the small bowel. The patient was discharged 2.5 weeks after the second operation. Presently he is in perfect condition with 48% excess weight loss in 6.5 months.

## Discussion

SG is becoming the procedure of choice in the treatment of nondiabetic morbidly obese patients worldwide. This

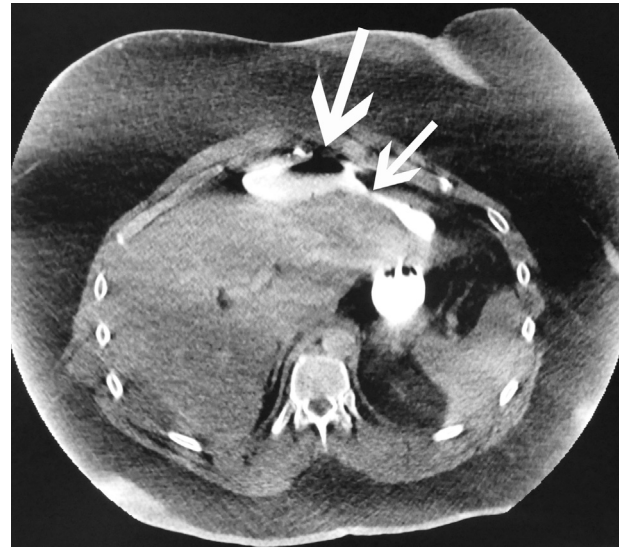


Fig. 2. Computerized tomography 9 days after the SG showing the leak (arrows).

also resulted in the recognition of previously underreported but potentially grave complications such as functional stenosis [1–9].

Stenosis and leak are major complications of SG with reported incidences averaging between .7%–4% [1–9] and .2%–3% [10–12] in specialized centers, respectively. Corresponding numbers at our center are 2.4% (8/337) and .2% (1/337) (unpublished data).

SG, in nature, is a stenotic restrictive procedure. Although the dilemma between making the tube more or less narrow is here to stay, during a SG, it is found that a pressurized tube is created [13]. After a SG, stenosis generally occurs at incisura angularis, and most if not all are functional [1–6]. They result from the twisting at the gastric angle or the tortuosity of the long staple line in the absence of an organic stricture [1–9]. Typically scopes can be easily advanced through this twisted portion, as in our case. This situation is thought to be a risk factor for the development of a leak proximal to the obstruction resulting from further increase in the tube pressure [7,8].

An algorithm regarding the management of a symptomatic stenosis even without a leak is yet to be defined. Functional stenosis is not an all or none phenomenon, and its clinical significance and natural course varies greatly. Some twisted sleeves may cause mild symptomatology and remain undetected if not particularly sought. Others can be associated with intolerance to future oral intake (particularly to solids) and newly developed reflux and frequently progress to a chronic stage [1–8]. A chronic symptomatic obstruction is primarily managed by repeat dilations with considerable success [1,3–6,9]. When conservative methods are not successful, conversion to RYGB electively is the best surgical option for the complete resolution of this chronic problem [1–3,9,14,15].

The addition of leak to a pre-existing obstruction during the early postoperative phase is the worse combination, constituting one of the greatest life-threatening challenges. There is almost no information regarding the best management option in this emergency clinical setting.

It is not possible to treat the leak efficiently without addressing the increased intratube pressure caused by the twisted segment. The efficiency of stenting both the leak and the obstructing segment is not known. This is especially true in acute settings. The stent, even if successful to seal the leak, may not relieve the obstruction once it is removed and may necessitate repeat future stentings for well-known migration problems. Therefore, we decided against stenting in favor of RYGB. By converting the kinked sleeve to a RYGB with a large anastomosis, the obstruction and therefore the pressure problem is solved. The leak point itself was not incorporated to the anastomosis intentionally because it would be impossible to do a proper, tensionless, dependent anastomosis technically. Patching the upper corner of the staple line using few stitches with the side of the jejunal Roux limb was all performed at the leak point. Once the pressured system was decompressed, the leak closed spontaneously.

## Conclusion

There is no algorithm to manage an acute leak in the presence of distal obstruction. In centers with enough surgical expertise, urgent conversion to RYGB can be a life-saving option. Provided that the diagnosis and resurgery are not delayed, RYGB has the potential of treating both the obstruction and leak without any stentings and further manipulations. The immediate decompressing effect of RYGB seemed to facilitate the spontaneous healing of the acute leak.

## Disclosures

*Mitchell S. Roslin, M.D., F.A.C.S. is an educational consultant at Johnson & Johnson Inc, Covidien Ltd, and W. L. Gore & Associates and receives compensation from these companies. Additionally, he is on the scientific advisory board at SurgiQuest and ValenTx and has stocks options in these companies.*

*The other authors have no commercial associations that might be a conflict of interest in relation to this article.*

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